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ABSTRACT

Having developed a model for assessing the state of occupational equipment, a study of two programs in six state technical institutes in Georgia found that their occupational equipment is fast becoming obsolete and concluded that $107,476 per state program would be needed to bring all programs up to recommended standards and a budget of $43,274 annually per program would be needed to offset obsolescence. In addition, it was recommended that a statewide inventory system, such as the one called INVENTORY FIRST-ASSESS ALL developed during the study, be used for periodic assessment of the equipment in all state technical institutes and for development of an exact profile of each institute's equipment, a discrepancy analysis, and specific recommendations for surplusing and purchasing, based on state standards and state technical committee equipment recommendations. This model would cost $5,000 per program if 20 program areas were assessed per year, or $530 per program if all 660 state programs were assessed. (The document consists of lists of members of the technical equipment assessment steering committee, the automotive technology equipment advisory group, and the information and office technology equipment advisory group; an introduction that explains the study and the model it produced; the findings of the assessment concerning the automative technology and the information and office technology programs in six institutes; a summary; and an appendix that details the study's methodology.) (CML)

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ED312386

A Model for Technical Equipment Assessment

Executive Summary

Georgia Council
On Vocational Education

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August, 1989

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A Model
for
Technical Equipment Assessment

Executive Summary

Developed for

Georgia Council on Vocational Education

by

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Mr. William H. Gunter, Jr.

Department of Vocational and Career Development

College of Education

Georgia State University

Atlanta, Georgia

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Acknowledgements

An undertaking such as this requires an amazing degree of dedication and cooperation on the part of the agencies involved, as well as from the representatives of business and industry. From the Georgia Council on Vocational Education, our thanks first go out to Mrs. Nellie Hoenes for providing the environment in which such an undertaking could exist and to Ms. Gerry Hesse for insuring that our lines of communications were always clear.

From the Georgia Department of Technical and Adult Education, we extend our thanks to Commissioner Kenneth H. Breeden for allowing instant and easy access into the schools selected for the study and to Mr. Robert Mabry and Dr. Douglas L. Bolen for their input and suggestions into all phases of this project.

Our thanks go out to the members of the Steering Committee who provided the project staff with opinions and suggestions based on many years of experience in the day-to-day operations of technical institutes.

Our special thanks to the two groups of people that worked hard and gave us the real world perspective that such a study must have - our Equipment Advisory Groups. These people took the time out of their normal routines and rated slide after slide to provide us with the data needed for our model.

Finally, this study required many meetings, each with special needs and requirements. All came off exactly as planned. Our thanks go to Mr. Marcus Carter, for insuring that the meetings went smoothly.

John Collum

Bill Gunter

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Introduction

Overview of the Study

One of the primary missions of technical education in Georgia is to provide the citizens of the state with an opportunity to obtain the knowledge, skills and attitudes required by business and industry and therefore secure, maintain and advance in meaningful and satisfying employment. Such learning should only take place on equipment that is safe, relevant and up-to-date. Furthermore, this equipment should tend to be state-of-the-art in order to facilitate the spread of newer technologies to all parts of the state. The Georgia Department of Technical and Adult Education (DTAE) was created to fulfill this mission at the postsecondary level. The Department administers over 70 programs offered to more than 100,000 people enrolled annually in the 29 technical institutes, 6 colleges with vocational programs, and 4 adult education centers located throughout the state.

Purpose of the Study

The primary purpose of this study was to develop a model for assessing the state of occupational equipment in technical institutes.

Primary Objectives of the Study

The primary objectives of this study were to:

- develop a procedural model for the utilization of business and industry input in the ongoing assessment and update of occupational equipment in technical institutes;
- utilize this assessment model to determine the adequacy of the occupational equipment in two technical institute instructional programs;
- develop a computer database for the inventory of all occupational equipment in technical institutes;
- develop a clearinghouse process to facilitate the sharing of unused equipment among technical institutes.

Other objectives included: describing the current procedures for equipment updating, inventorying and allocating funds; developing a procedural model for the acquisition of new occupational equipment; and, using the acquisition model for developing a plan for updating the equipment in the two selected instructional programs to state-of-the-art standards.

Definitions

Equipment--Physical resources used in an operation or activity, generally of more complexity than a common tool.

Equipment adequate for instruction--Equipment which is safe, represents a level of technology comparable to that used by the appropriate businesses and industries and allows the ready transfer of learned knowledges and skills to similar equipment in business and industry.

Equipment category--The term used to describe a generic grouping of similar equipment.

Instructional relevance--A piece of equipment is deemed relevant for instruction if skills learned on that equipment are readily transferred to related equipment in business and industry.

Level of technology--Explained by the following scale:

- Level 4--State-of-the-Art: Equipment just finding its way into cutting edge industries.
- Level 3--Increasing Use: Equipment that is just entering many businesses.
- Level 2--Stable Use: Equipment that currently exists in most businesses. The knowledges and skills necessary to use the equipment are well known.
- Level 1--Declining Use: Most businesses are phasing out the equipment.
- Level 0--Obsolete: The equipment no longer exists in most businesses.

The equipment in the technical institutes should represent a technology "mix" that is skewed towards Levels 2 through 4 due to the need for Georgia's institutes to assist in transferring new technology to business and industry throughout the state.

Assumptions of the Study

In order to obtain the most accurate picture of "what is" in the way of equipment in the technical institutes, the model assumes that each program currently has the correct number of pieces of each type of equipment for its own particular situation.

Eventually, the "what should be" question must be addressed and must not only include the concept of technology mix, but also the number of workstations necessary for each category of equipment for each program.

The Original Model

The original model set forth in the proposal called for the following steps to occur:

- Determine the program(s) to assess;
- Establish the Equipment Advisory Group (EAG) made up of business, industry and educational representatives for that specific program area;
- Hold the first EAG meeting to determine the categories of equipment to be assessed;
- Survey the institutes offering the program for inventory data;
- Input the survey data into a database;
- Have slides taken of all non-duplicated pieces of equipment found in the institutes;
- Hold a second EAG meeting to rate each slide according to the respective level of technology represented, the instructional relevance of the piece of equipment, the physical and technological lifespans of the equipment and, for each category, criteria and specifications as to the future of that category and the mix of technology that should be allowed in instructional programs.
- Input the EAG data into the database; and
- Generate reports by program and by institute.

The reports would provide the following information:

- The estimated dollar amount required to bring the equipment in that program, for one or all institutes in the state, up to the suggested technology mix recommended by the EAG;
- The specific pieces of equipment that must be removed from the program(s) due to either being obsolete, surplus, or deemed illegal by federal or state regulations;
- Criteria and specifications for the purchase of new equipment in each category; and
- The frequency suggested by the EAG for the review of each category of equipment for that program.

In other words, upon completion of the assessment of a program, DTAE would be able to identify for each institute, which specific piece of equipment to surplus, what should be bought to replace it, and the approximate replacement cost.

A Basic Example of the Original Model

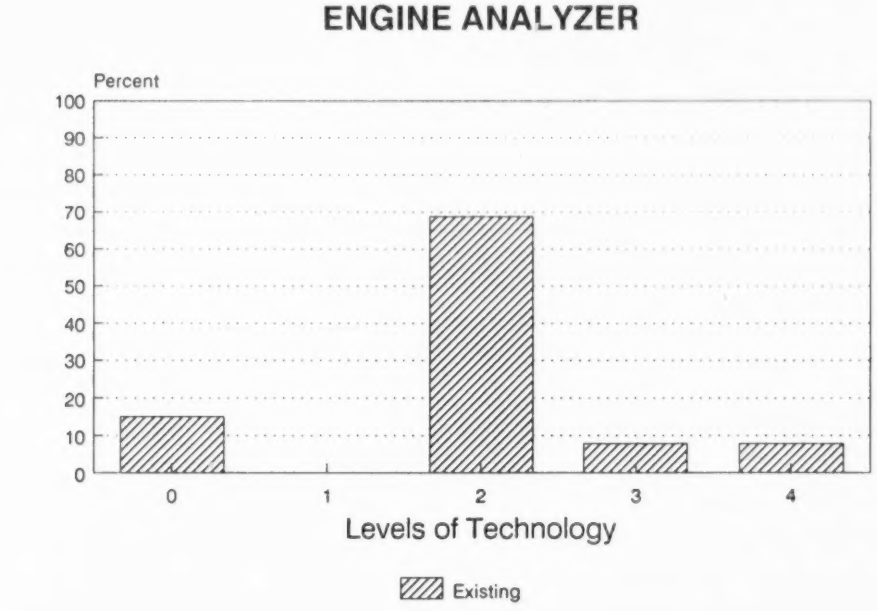
Following is a simplified discussion of how the model works. In this example, the category of engine analyzers is being assessed in six automotive technology programs.

The six institutes are visited and slides are taken of 13 nonduplicated engine analyzers. Inventory data is also obtained. Each slide is then rated by the Equipment Advisory Group (EAG) for automotive mechanics according to the following scale:

- Level of Technology (LOT)

4	State-of-the Art
3	Increasing Use
2	Stable Use
1	Declining Use
0	Obsolete

In this example, out of a total of 13 engine analyzers, one is rated LOT 4, one is rated LOT 3, nine are rated LOT 2, none are rated LOT 1 and two are rated as LOT 0. These numbers when graphed, show the percent of equipment at each level of technology.

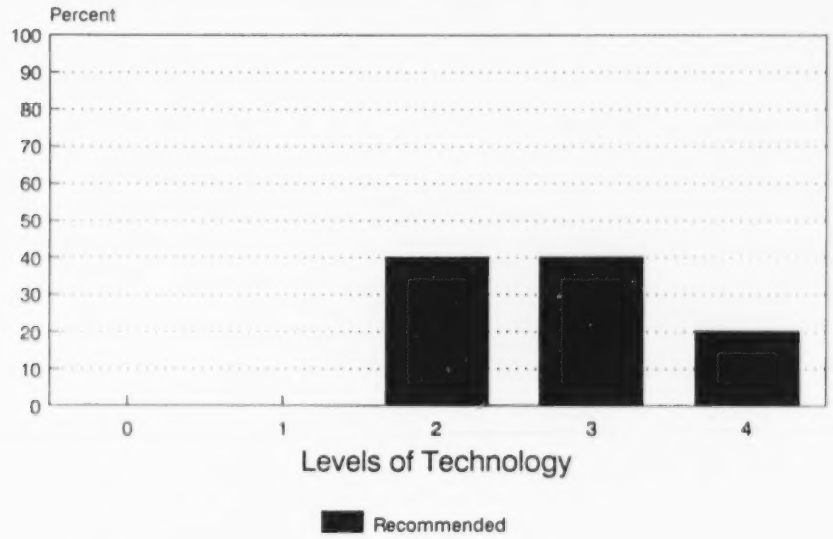


Program: Automotive Technology
Site: Pilot Test Schools

The preceding graph shows the result of the rating of 13 engine analyzers by the EAG in percentages. Out of the total 13 pieces of equipment: 15 percent is LOT 0 (obsolete); 69 percent is LOT 2 (stable use); 8 percent is LOT 3 (increasing use); 8 percent is LOT 4 (state-of-the art). Note that the percentage of LOT 2 equipment is more than double the combined percentages of the other 3 levels of technology. Also, note that the percentage of obsolete equipment is approximately the same as the combined percentages of LOT 3 and LOT 4.

Next, the EAG decides on a suggested technology mix for engine analyzers in any instructional program. In this instance, the EAG did not recommend any obsolete equipment although it is possible for equipment to be recommended for all five levels of technology. Below is a graph showing what an actual EAG recommended for engine analyzers.

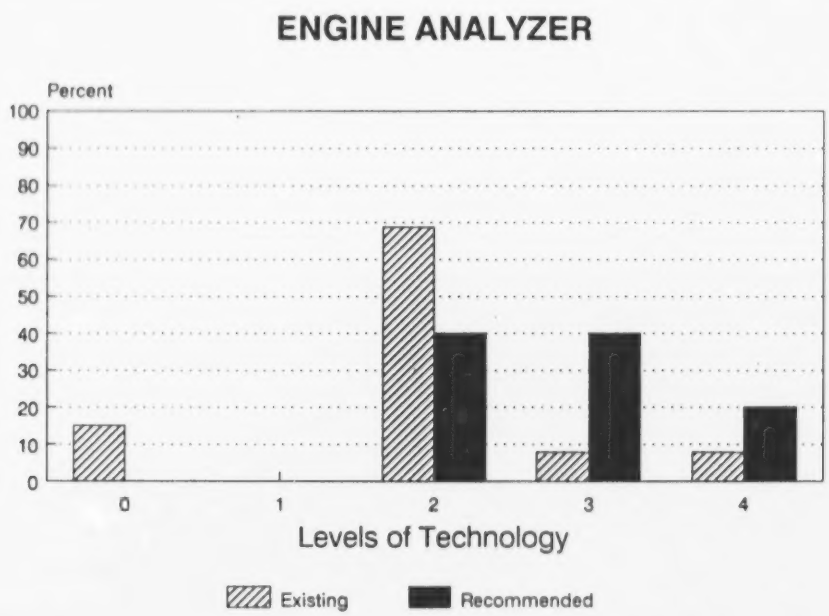
ENGINE ANALYZER



Program: Automotive Technology
Site: Pilot Test Schools

The above graph shows the EAG's suggested usage rating in percentages for the engine analyzer equipment category. The EAG recommends 80 percent of the equipment be divided evenly between LOT 2 and LOT 3. The remaining 20 percent should be LOT 4 equipment.

Superimposing these two graphs yields the final category profile for engine analyzers.



Program: Automotive Technology
Site: Pilot Test Schools

The above graph shows actual percentages versus recommended. Note that in LOT 2 (stable use) 29 percent or 4 of the 13 total number of pieces of equipment should be replaced with level 3 and/or level 4 equipment.

Based on the profile above, to bring the equipment in this category up to recommendations, the following actions would be suggested:

1. Two pieces of equipment at LOT 0 should be surplused.
2. Four pieces of equipment at LOT 2 should be sent to a clearinghouse.
3. Four pieces of equipment at LOT 3 should be purchased.
4. Two pieces of equipment at LOT 4 should be purchased.

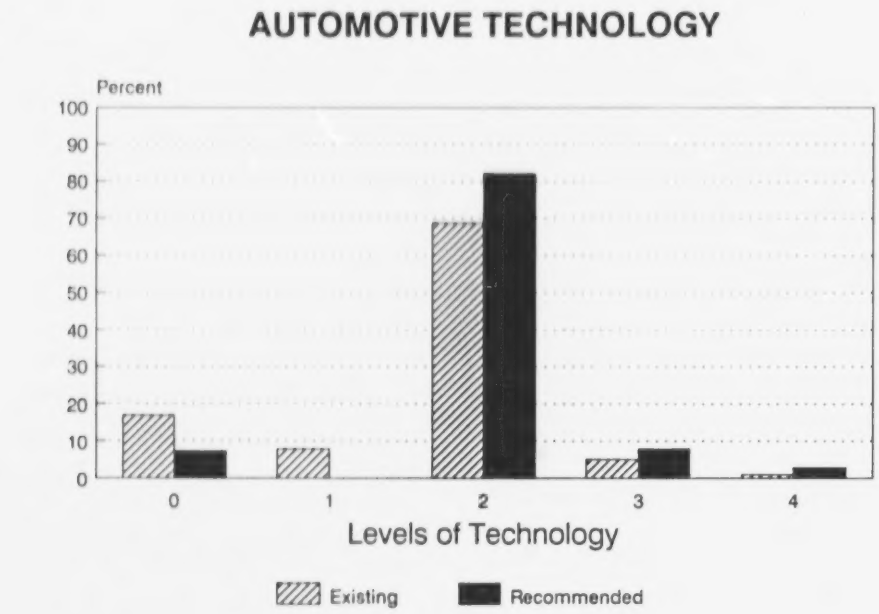
The equipment removed from these programs could possibly be used at another institute or in a secondary program. Note that other types of equipment (e.g., computers) could possibly be relocated to another program within the same institute.

Assuming that the number of engine analyzers in each program is correct, at an estimated cost of $35,000 for each new engine analyzer, $210,000 should be expended to bring the category of engine analyzers up to recommendations in all six programs.

Findings

The Automotive Technology Program

The following graph represents the findings of the Automotive Technology programs in the 6 pilot test schools. The existing percentages for the levels of technology were obtained by dividing the number of pieces of equipment in each level of technology, as rated by the EAG, by the total number of pieces surveyed. The recommended percentages for the levels of technology are an average of the suggested usage rating made by the EAG for each category.



Site: Pilot Test Schools

The above graph shows that the majority (69%) of the equipment in the combined 6 pilot schools is LOT 2 (stable use). This is 13% less than the EAG suggested usage of 82%. Note the suggested usage of 7% assigned to LOT 0 (obsolete) equipment. Although the equipment is obsolete, it is relevant for instructional use and could remain in the program. Also note, the EAG recommended 0% of LOT 1 (declining use) equipment.

Following is a table of the findings for Automotive Technology. The data represented in the above graph can be found in the following table. All replacement values are based on retail prices quoted by the EAG.

FINDINGS

AUTOMOTIVE TECHNOLOGY

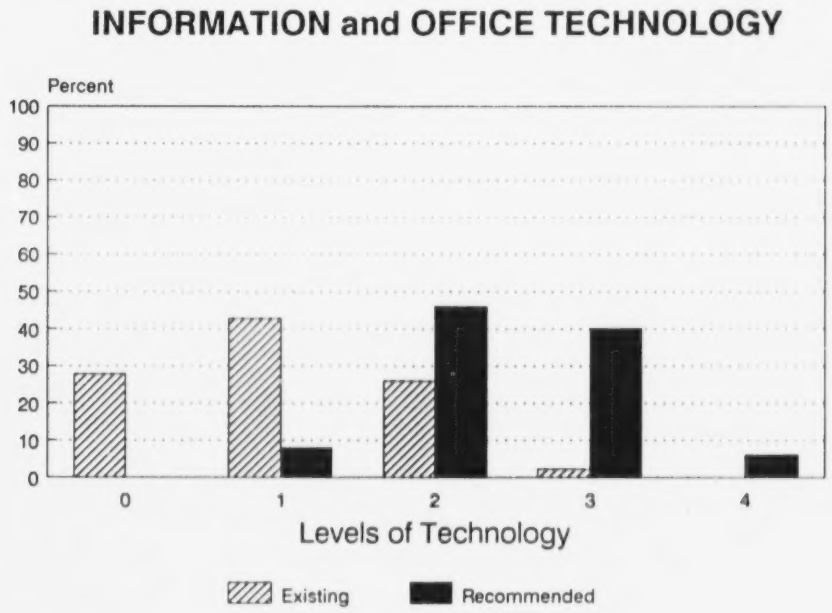
	AUTOMOTIVE	TOTAL # OF PIECES	ACTION[1]		COST OF 6 PROGRAMS	COST OF 1 PROGRAM (AVG)	EST COST OF 31 PROGRAMS
			NO	YES			
	A	B	C	D	E	F	G
1	TOTAL	270			$1,174,070	$195,678	$6,066,018
2	AVERAGE COST / PIECE EQUIPMENT	1			$4,348		
3	LEVEL 0	45 (17%)	10	35	$222,300	$37,050	$1,148,550
4	LEVEL 1	22 (8%)	0	22	$15,650	$2,608	$80,848
5	LEVEL 2	186 (69%)	166	20	$134,600	$22,433	$695,423
6	LEVEL 3	14 (5%)	13	1	$0	$0	$0
7	LEVEL 4	3 (1%)	3	0	$0	$0	$0
8	TOTAL UPGRADE	270 (100%)	192	78	$372,550	$62,091	$1,924,821

Cell B1 is the total number of pieces of equipment rated by the EAG. Cell E1 is the current replacement cost of the 270 pieces. Cell F1 is an average replacement cost per program (E1/6). Cell G1 is the estimated replacement cost of all Automotive Technology equipment in the state (F1*31). Cell E2 is an average replacement cost for one piece (E1/B1). Cell E2 is not used for any other calculations in this table. Cells B3-D8 are the results of the EAG ratings. Cells C3-C8 are the number of pieces of equipment that require no action to be taken. Cells D3-D8 are the number of pieces of equipment that should be either: moved to another program within the institute; offered to another institute through a Clearing House process; offered to a secondary program; or surplused. Cells E3-E8 are the costs required to bring the pilot test schools up to EAG recommendations. Cells F3-F8 are the average costs to bring 1 program up to EAG recommendations. Cells G3-G8 are estimated costs to bring all the Automotive Technology programs up to EAG recommendations (F3..F8*31).

(1) Assuming the total number of pieces of equipment in each category is that required by the program, based on its particular situation.

The Information Office Technology Program

The following graph represents the findings of the Information and Office Technology programs in the 6 pilot test schools. The existing percentages for the levels of technology were obtained by dividing the number of pieces of equipment in each level of technology, as rated by the EAG, by the total number of pieces surveyed. The recommended percentages for the levels of technology are an average of the suggested usage rating made by the EAG for each category.



Site: Pilot Test Schools

The above graph shows that the majority (71%) of the equipment in the combined 6 pilot schools falls into LOT 0 (obsolete) and LOT 1 (declining use). The EAG recommended that only 8% of the equipment be LOT 1 and 0% for LOT 0. Note that the recommended usage is 46% in LOT 2 and 40 % in LOT 3. The explanation for the heavy weighting in LOT 3 is the rapidly changing technology in this particular program.

Following is a table of the findings for Information and Office Technology. The data represented in the above graph can be found in the following table. Again, all replacement cost values are based on retail prices as quoted by the EAG.

FINDINGS

INFORMATION AND OFFICE TECHNOLOGY

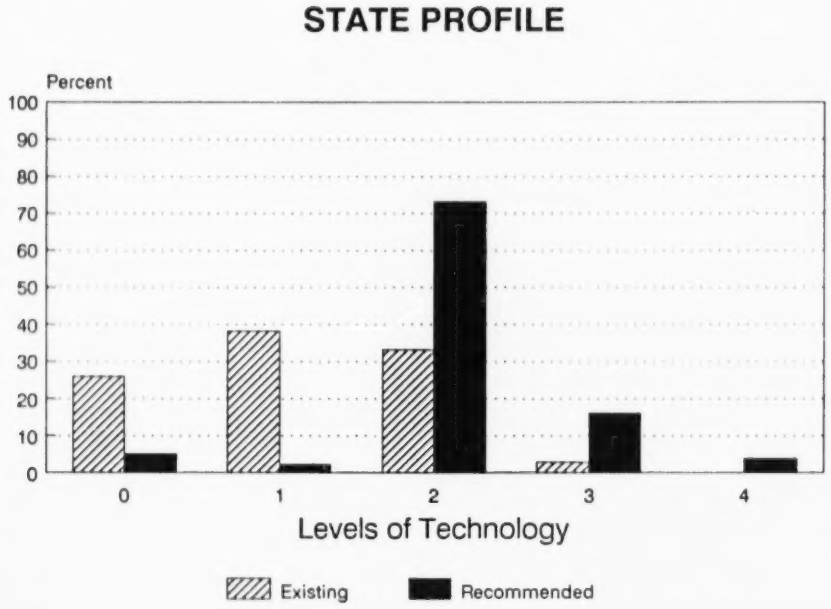
	INFORMATION AND OFFICE	TOTAL # OF PIECES	ACTION[1]		COST OF 6 PROGRAMS	COST OF 1 PROGRAM (AVG)	EST COST OF 32 PROGRAMS
			NO	YES			
	A	B	C	D	E	F	G
1	TOTAL	1389			$1,207,110	$201,185	$6,437,920
2	AVERAGE COST / PIECE EQUIPMENT	1			$869		
3	LEVEL 0	395 (28%)	0	395	$242,395	$40,399	$1,211,970
4	LEVEL 1	604 (44%)	171	433	$647,335	$107,889	$3,236,670
5	LEVEL 2	357 (26%)	299	58	$27,430	$4,572	$137,160
6	LEVEL 3	33 (2%)	33	0	$0	$0	$0
7	LEVEL 4	0 (0%)	0	0	$0	$0	$0
8	TOTAL UPGRADE	1389 (100%)	503	886	$917,160	$152,860	$4,585,800

Cell B1 is the total number of pieces of equipment rated by the EAG. Cell E1 is the current replacement cost of the 1389 pieces. Cell F1 is an average replacement cost per program (E1/6). Cell G1 is the estimated replacement cost of all Information and Office Technology equipment in the state (F1*32). Cell E2 is an average replacement cost for one piece (E1/B1). Cell E2 is not used for any other calculations in this table. Cells B3-D8 are the results of the EAG ratings. Cells C3-C8 are the number of pieces of equipment that require no action to be taken. Cells D3-D8 are the number of pieces of equipment that should be either: moved to another program within the institute; offered to another institute through a Clearing House process; offered to a secondary program; or surplused. Cells E3-E8 are the costs required to bring the pilot test schools up to EAG recommendations. Cells F3-F8 are the average costs to bring 1 program up to EAG recommendations. Cells G3-G8 are estimated costs to bring all the Information and Office Technology programs up to EAG recommendations (F3..F8*32).

(1) Assuming the total number of pieces of equipment in each category is that required by the program, based on its particular situation.

Projected Data

Following is a graph of the combined findings for Automotive Technology (AUT) and Information and Office Technology (IOT). This was done only to provide an example of statewide data.



Site: Pilot Test Schools

After combining the equipment ratings for the AUT and IOT programs, the projected state profile indicates that the majority of the equipment (64%) currently in use in technical institutes falls into LOT 0 (obsolete) and LOT 1 (declining use). Note that the recommendations suggest 73% of the combined equipment be LOT 2 (stable use). This graph can be used to give an overall indication of the condition of the equipment in the state. It cannot, however, be used as a basis for purchasing equipment in any program.

By taking the data obtained from two programs in six institutes and projecting to all programs in the state, some indication as to the magnitude of the problem facing DTAE as technology continues to change can be roughly estimated. Two problems exist. The first problem is bringing the existing equipment up to the level recommended by business and industry. The magnitude of this first problem is in the range of 40-100 million dollars. The second problem is maintaining the level recommended by business and industry. This problem occurs every year as technology changes and equipment ages. Again, using the technological lifespan data collected in 12 programs, and projecting statewide, the magnitude of the second problem is in the range of 15-45 million dollars a year.

Sample Reports

The reports that can be generated by the database begin at the lowest level (equipment) and proceed up to the highest level (state). Examples of non-profile reports are:

- Equipment Action Report--This report would be provided for each program. The report provides the plan of action necessary to bring the program up to EAG recommendations. Individual pieces of equipment are listed along with the recommended action to be taken.

- Category Summary Report--This report would also be provided to each program. The report contains summary data for each category of equipment. The report would be useful for quickly determining where major problems exist and the estimated expenditures necessary to meet recommendations.

- Program Summary Report--This report would be of interest to the president of a technical institute. The report shows, for each program in the institute, an estimate of how much should be expended to bring that program up to EAG recommendations.

- Institute Summary Report--This report would be of interest to DTAE. The report shows, for each institute, an estimate of how much should be expended to bring the equipment in each institute up to recommended levels.

Examples of profile reports are:

- Category Profile Report--This report would contain the graphical profiles showing the actual mix of technology in one category of equipment in a program, the mix recommended by the EAG and the average mix in all similar programs in the state.

- Program Profile Report--This report represents a graphical profile of all categories of equipment for one program, the average mix recommended by the EAG and the average profile for all like programs in the state.

- State Profile Report--This report provides at a glance, the state of the equipment in the technical institutes in Georgia. All equipment categories are represented along with the average of the recommended mix of technology by the EAGs.

Recommendations

(As approved by the Georgia Council on Vocational Education - July 27-28, 1989)

The Postsecondary Equipment Assessment Model was originally conceived as being used in conjunction with a standardized inventory system which accurately represented the existing equipment in each program area. At the technical institutes where the Model was piloted, this assumption was found to be unwarranted for the most part. Each institute encountered in the pilot seemed to have a somewhat different way to maintain its inventory. Some of the institutes relied on computer printouts of inventory, which, upon closer scrutiny, were found to be inaccurate in many cases. In fact, the equipment assessment process was hindered because there was no uniform system of inventory in place. For this reason, it is strongly recommended that a uniform inventory system, as required by the Postsecondary Equipment Assessment Model, be implemented before the Assessment Model is used. Hence, the following specific recommendations are made:

1. The standardized systemwide inventory process adopted by the Department of Technical and Adult Education (DTAE) should be in place for any program area in which the Postsecondary Equipment Assessment Model is to be used. It is recommended that, eventually, the standardized inventory system should be in place for all programs and that the instructional equipment in all of the program areas should be assessed using the Postsecondary Equipment Assessment Model.

2. The unified system for the inventory of existing equipment which DTAE adopts should involve going to each individual piece of equipment for make, model, serial number, and other relevant data. Existing databases should NOT be relied upon to set up this inventory system.

3. The unified inventory system, which is compatible with DOAS requirements, such as PROPS, should include a process for adding new purchases to the inventory, as well as a process for easily removing outdated equipment.

4. The guidelines for a uniform inventory system should be established by DTAE, with the process implemented and maintained by each institution.

5. DTAE should designate a state-level person to be responsible for the coordination of the systemwide inventory and assessment of equipment.

6. A listing of the inventory should be submitted by each institute to the DTAE at least annually until this information can be made available through the systemwide database DTAE is currently building. By adding inventory data to the systemwide database, inventory information would be on-line, in easily accessible form.

7. The inventory process should use a data structure which is compatible with DOAS requirements, such as PROPS, and also should provide the fields necessary for use by the Assessment Model. It is suggested that maintaining the inventory in dBase III might be appropriate for this purpose.

8. It was found that providing a visual representation of each type of equipment in the inventory along with an identification number which tied it to the database, greatly facilitated the use of the equipment assessment. Therefore, it is recommended that DTAE retain this component of the assessment and explore ways to simplify this procedure. One method of providing this visual representation would be to have a quality slide of each type of equipment, if not each piece, taken by the local media specialist or some other appropriate person at each institution.

   It is further recommended that the visual representation be submitted to the DTAE coordinator of inventory and assessment with an identification number which ties it to the database entry for that piece/type of equipment.

9. Although the need for flexibility at the institutional level is recognized, it is recommended that the Board of Technical and Adult Education establish standards not just for the type of instructional equipment and the technological mix of the equipment required for each program area, but also establish standards for the number of pieces of each type of instructional equipment which is necessary to provide an adequate program.

10. The Postsecondary Equipment Assessment Model should be updated continually through the input of state technical committees and program advisory committees. Together, these committees recommend equipment standards and/or rate the technology of existing equipment, as well as make recommendations for program standards which may affect instructional equipment choices. Through the ongoing input of these committees, the Model may not only be kept up-to-date, but streamlined as well.

FURTHER, the Council recommends that the Department of Technical and Adult Education begin putting the systemwide inventory system in place immediately. DTAE should request funds for the assessment of equipment for approximately 20 program areas during FY'91 and annually thereafter so that the assessment of the equipment for all programs can be completed by FY'93.

Summary

The occupational equipment in Georgia's technical institutes is fast becoming obsolete. In a survey of only two programs in six institutes, this study determined that $1,289,710, or $107,476 per individual program, would be required to bring these programs up to recommended standards. In addition, approximately $43,274 would have to be budgeted annually per individual program to offset eventual obsolescence.

It is clear that some process should be initiated to obtain a clear picture of what currently exists in the programs in the way of equipment and how that equipment is perceived by business and industry. We believe that process should consist of a well-designed, statewide inventory system followed by the periodic assessment of all equipment in all programs.

Once an accurate inventory system is established, assessment becomes much more simplified. Institutes do not have to be visited, photographers do not have to be employed. Survey forms do not have to be mailed out. If such an equipment assessment system were in place, the assessment could be done on all programs. This model would combine the concept of level of technology and technology mix with the state standards and state technical committee equipment recommendations for each program to provide a complete discrepancy analysis. This system would furnish all institutes with an exact profile of their equipment along with specific recommendations for surplusing and purchasing. Highly accurate information would be available to DTAE on the total replacement value of all equipment, the yearly cost to keep equipment up to the suggested industry profiles and the status of each program in each institute. This model then, called INVENTORY FIRST-ASSESS ALL, would allow business and industry, through the equipment advisory groups, maximum input into the equipment used in the technical institutes and is the model recommended by the project staff. This model would cost $5,000 per program area assuming 20 program areas are assessed per year. The complete cycle would take 36 months to complete. Based on 660 individual programs in the state, the cost per program would be $530.

Appendix

Methodology

The following sections detail the methodology used in this study. These activities are also graphically represented on the Gantt chart at the end of this section.

Steering Committee Meeting #1

The Steering Committee met initially on 10-04-88. The purpose of the meeting was to describe the project, present the contractors original model and obtain input and suggestions from all parties. The project staff presented a simulation, using actual slides of equipment, of how the data would be collected, analyzed and presented. The simulation was well received and the initial model was approved. Additional fields were then suggested for the database that would be developed, the two programs that would be pilot tested were identified, the makeup of the Equipment Advisory Groups was discussed and the state technical institutes were categorized as either rural or urban.

Selection of the Institutes

Two urban and four rural institutes to be included in the pilot test were randomly selected. The institutes selected in the urban category were Augusta Tech and Gwinnett Tech, and the rural institutes were Carroll Tech, Heart of Georgia Tech, Lanier Tech and North Georgia Tech.

Steering Committee Meeting #2

The second meeting of the Steering Committee was held on 10-21-88. The two programs to assess were finalized. They were Automotive Technology and Information Office Technology (IOT).

Equipment Advisory Meetings - #1

The initial meeting of the Automotive Mechanics Equipment Advisory Group was held on 11-29-88, and the initial meeting of the IOT Equipment Advisory Group was held on 12-01-88. The meetings were used to identify how all of the occupational equipment in the respective typical programs could be categorized.

Design of the Database

A computer database was developed that could serve as the beginning of an inventory database for the equipment in the technical institutes. The programming was done using dBase III + so that the database could be accessed from a microcomputer. The structure of the database is as follows:

- Reference number
- Equipment name
- Manufacturer
- Vendor
- Program ID#
- Date of purchase
- Date of last major overhaul (if applic).
- Replacement cost
- Date evaluated
- Photo date
- Data on shared equipment
- Instructional relevance rating
- Equipment category
- Equipment model
- Serial number
- Institute ID #
- Inventory ID#
- Date of manufacture
- Original cost
- Lifespan
- Photo ID#
- Location (bldg, room)
- Level of technology rating
- Instructional usage rating

The database also includes data for each category of equipment:

- Level of technology profile
- Equipment trend data

Design of the Survey

A survey form was developed that would capture all of the data necessary for the data analysis. This form, along with specific instructions and a cover letter from Commissioner Ken Breeden, was then mailed to the pilot test institutes on 12-09-88.

Identification of a Photographer

On 01-09-89, bid forms for photographic services were distributed and a photographer was selected on the basis of low bid for color slides.

Initial Database Listings

As the survey forms returned from the institutes, the data was keyed into the database. This process took 51 hours for the two programs in the six institutes. This represents an average of 4.25 hours required for each program in each institute.

Taking the Slides

On 01-26-89, the photographer and all project staff met at Gwinnett Tech for the first photo session. Printouts of the database indicated which specific pieces of equipment needed to be photographed (so that no slides were taken of duplicate pieces of equipment). Each piece of equipment was given a unique picture identification number that would show up in the slide and was photographed three times at different exposures. Both the Automotive and IOT programs were photographed in less than four hours. The last institute was photographed on 02-08-89.

A total of 1260 slides were taken in the 12 programs of 289 pieces of equipment. Due to the poor quality of the survey data, many unnecessary slides were taken.

Equipment Advisory Meeting - IOT - #2

The second meeting of the IOT EAG was held on 02-14-89. After a review of the progress to date and a discussion of the procedures for rating the slides, the group proceeded to examine the slides taken in the six pilot test institutes. Slides of equipment were randomly arranged within each category. Each slide was rated on level of technology, instructional relevance, physical lifespan and technological lifespan. At the end of each category, the group discussed the suggested mix of technology that should be in the IOT Program for that category of equipment and the future of that category in business and industry and provided criteria, specifications and replacement costs for purchases of equipment within that category. The group took 4.5 hours to rate 104 slides. At the end of the meeting, the group was asked to evaluate the process used to rate the slides. The group was unanimous in stating that the consensus method used to rate the slides was the best suited.

Equipment Advisory Meeting - Automotive - #2

The second meeting of the Automotive EAG was held on 02-22-89. The process was identical to the IOT EAG. The group took 3.5 hours to rate 185 slides. At the end of the meeting, the group was asked to evaluate the process used to rate the slides. The group was unanimous in stating that the consensus method used to rate the slides was the best suited.

Final Data Entry

Upon completion of the rating of the slides, this data was added to the database. This process required 18.5 hours of keyboarding. This averages out to 1.5 hours per program per institute.

Data Analysis

Over 200 manhours were spent analyzing the data contained in the database to produce the tables and graphs in this report.

Preparation of the Executive Summary

The project staff realized near the end of the data collection process that well over 500 graphs could be generated by the data. The graphs combined with analysis discussions represented a large amount of information that would be contained in the technical report. A decision was made to incorporate the highlights of the process, findings and recommendations into an executive summary. This summary would be more readily suited to a larger distribution than the technical report. A copy of the technical report can be obtained form the Georgia Council on Vocational Education.

Technical Equipment Assessment Project
Gantt Chart

04/25/89